Rev. 10/93

Amendments to Claims

1. (currently amended) A process for making a water dispersible titanium dioxide pigment comprising:

(a) mixing dry titanium dioxide pigment with water to form a mixture having a pigment concentration of from about 14 to 40 weight percent based on the weight of the mixture then adjusting the pH of this mixture to about 7 with aqueous sodium hydroxide;

(b) heating the mixture from step (a) to a temperature of about 40°C;

(c) adding to the mixture from step (a) simultaneously

and at a rate such that the pH of the resulting mixture is maintained at about 7 throughout this step (c) from about 0.15 to 0.65 moles of phosphoric acid per kilogram of dry pigment and at least a portion of sodium aluminate aqueous solution required to react with the phosphoric acid to form a surface treatment consisting essentially of aluminum phosphate, the ratio of phosphorous added to the moles of aluminum added being from about 0.2 to 0.9;

(d) adding any remaining aqueous sodium aluminate solution required to react with unreacted phosphoric acid added in step (c) to complete the formation of aluminum phosphate simultaneously with a solution of hydrochloric acid wherein the rate of addition of aluminate solution and that of the acid solution is adjusted so that that the pH of the resulting mixture from and in this step (d) is maintained in a range from 5 to 8; and

(e) curing the mixture from step (d) for from about 10 to 30 minutes.

Cancel claim 2.

3. (Original) The process of claim 1 wherein in step (c) the addition of aqueous sodium aluminate is made so that the ratio of the moles of phosphorous added to the moles of aluminum added is from about 0.25 to 0.6.

4. (Original) The process of claim 1 wherein in step (c) the addition of aqueous sodium aluminate is made so that the ratio of the moles of phosphorous added to the moles of aluminum added is about 0.5.

5. (Original) The process of claim 1 wherein the amount of phosphoric acid added in step (c) is from about 0.23 to 0.52 moles per kilogram of pigment.

6. (Original) The process of claim 1 wherein the amount of phosphoric acid added in step (c) is about 0.40 moles per kilogram of pigment.

7. (Original) The process of claim 1 wherein the amount of phosphoric acid added in step (c) is about 0.44.

Cancel claim 8.

9. (Withdrawn) A light fast titanium dioxide pigment consisting of titanium dioxide and single layer of inorganic surface treatment consisting of aluminum phosphate wherein the pigment is characterized by and isoelectric point which is greater than pH 6 and a negative zeta potential of less than negative 20 at a pH of 7.5 or more.

10. (Withdrawn) A titanium dioxide pigment consisting of titanium dioxide and single layer of inorganic surface treatment consisting of aluminum phosphate wherein the pigment is characterized by an isoelectric point which is greater than pH 6 and a negative zeta potential of less than negative 20 at a pH of 7.5 or more made by a process comprising:

(a) mixing dry titanium dioxide pigment with water to form a mixture having a pigment concentration of from about 14 to 40 weight percent based on the weight of the mixture then adjusting the pH of this mixture to about 7 with aqueous sodium hydroxide;

(b) heating the mixture from step (a) to a temperature of about 40°C;

(c) adding to the mixture from step (a) simultaneously and at a rate such that the pH of the resulting mixture is maintained at about 7 throughout this step (c) from about 0.15 to 0.65 moles of phosphoric acid per kilogram of dry pigment and at least a portion of sodium aluminate aqueous solution required to react with the phosphoric acid to form aluminum phosphate, the ratio of phosphorous added to the moles of aluminum added being from about 0.2 to 0.9;

(d) adding any remaining aqueous sodium aluminate solution required to react with unreacted phosphoric acid added in step (c) to complete the formation of aluminum phosphate simultaneously with a solution of hydrochloric acid wherein the rate of addition of aluminate solution and that of the acid solution is adjusted so that that the pH of the resulting mixture from and in this step (d) is maintained in a range from 5 to 8; and

(e) curing the mixture from step (d) for from about 10 to 30 minutes.

11. (Withdrawn) The pigment of claim 10 wherein the dry titanium dioxide in step (a) is rutile.

12. (Currently amended) The process of claim 1 ~~or~~ wherein following step (e) the mixture is filtered and the pigment recovered and washed and dried then micronized at a temperature of from 200 to 420°C.

13. (Withdrawn) A laminate paper containing titanium dioxide pigment of claim titanium dioxide pigment made according to claim 1.

14. (Withdrawn) A paper laminate comprising paper pulp and a titanium dioxide pigment made according to the process of claim 1.

15. (New) A process for making a water dispersible titanium dioxide pigment comprising:

(a) mixing dry titanium dioxide pigment with water to form a mixture having a pigment concentration of from about 14 to 40 weight percent based on the weight of the mixture then adjusting the pH of this mixture to about 7 with aqueous sodium hydroxide to form a first mixture;

(b) heating the first mixture from step (a) to a temperature of about 40°C;

(c) adding to the first mixture from step (a) from about 0.15 to 0.65 moles of phosphoric acid per kilogram of dry pigment to form a second mixture followed by adding at least a portion of sodium aluminate aqueous solution required to react with the phosphoric acid to form a surface treatment consisting essentially of aluminum phosphate, the sodium aluminate aqueous solution being added to the second mixture in an amount sufficient to raise the pH of the resulting mixture to a pH of about 7;

(d) adding any remaining aqueous sodium aluminate solution required to react with unreacted phosphoric acid added in step (c) to complete the formation of aluminum phosphate simultaneously with a solution of hydrochloric acid wherein the rate of addition of aluminate solution and that of the acid solution is adjusted so that that the pH of the resulting third mixture from and in this step (d) is maintained in a range from 5 to 8; and

(e) curing the third mixture from step (d) for from about 10 to 30 minutes.